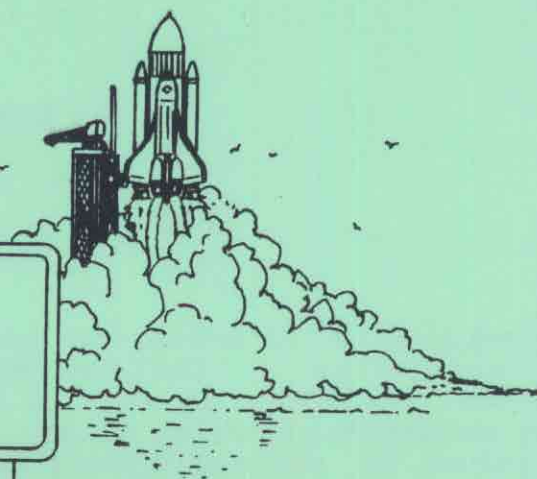


COUNTDOWN

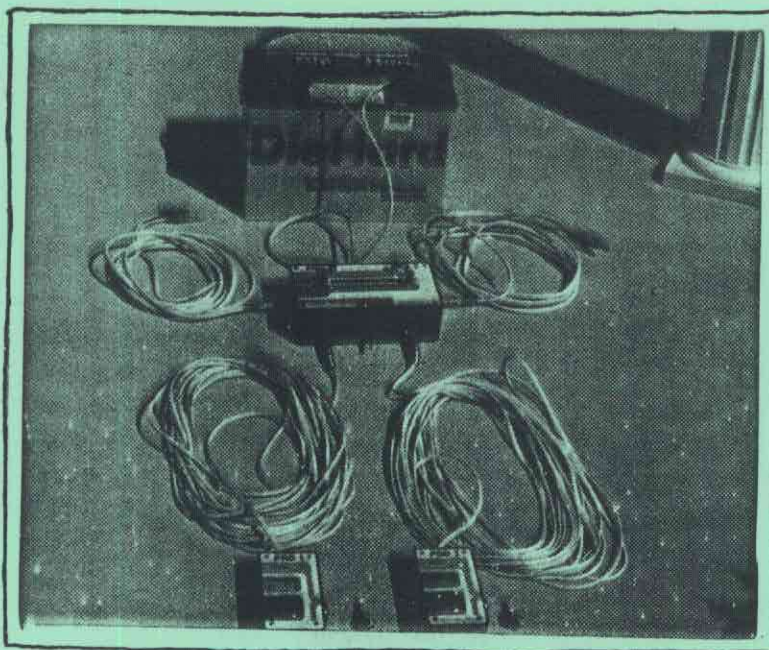


OFFICIAL NEWSLETTER OF
THE SOUTHERN PENNSYLVANIA AREA ASSOCIATION OF ROCKETRY

VOLUME 7, ISSUE 4

JULY/AUGUST 1994

FROM ED MILLER'S WORKSHOP: A RELAY LAUNCHER PLAN



PLUS

SPORT PLAN: THE XR-55 DALE'S NARAM-36 REPORT

SECTION NEWS NOTES FLIGHT LOGS SPORT LAUNCH COVERAGE

The Countdown

Volume 7, Issue 4

July/August 1994

The **Countdown** is the newsletter of SPAAR, the Southern Pennsylvania Area Association Of Rocketry, NAR Section #503, PO Box 127, Reamstown, PA 17567, as well as of Tripoli Susquehanna/#71. Non-member subscription rate, \$6 per year, six issues. Please make all submissions to address above. Material may be used with proper credit.

Cover Logo: **Bob Stott** Jacket Design: **Bruce Canino** Editor: **George Beever**

Thanks This Time To:

Ed Miller, Dale Greene, & Rick Hackman

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SCHEDULE

SUNDAY, SEPTEMBER 4, 1994: SPAARSEC-XI SECTION MEET & SPORT LAUNCH, 9AM-5PM, COCALICO HS. EVENTS: B SUPERROC ALT, A PAYLOAD ALT, C EGGLOFT ALT, 1/2A HELICOPTER DURATION [MULTI-ROUND].

SUNDAY, SEPTEMBER 18, 1994: MEETING/SPORT LAUNCH, 1PM - 5PM, COCALICO HS. * CLUSTER ALTITUDE DAY *****

SUNDAY, OCTOBER 9, 1994: MEETING/SPORT LAUNCH, 1PM - 5PM, COCALICO HS. * OLD ROCKET DAY *****

SUNDAY, NOVEMBER 13, 1994: MEETING/SPAARSPAM-6, 1PM - 5PM, COCALICO HS. "EVENT" TO BE ANNOUNCED. CHILI-LOFTING, ANYONE?

SECTION NEWS NOTES

EDITOR'S EXCUSES, PART II: The July/August issue in September? Sorry 'bout that. Why? Well, for starters, that temporary new job assignment became permanent. That meant a physical move to a new office, along with the accompanying havoc. All of this, for the time being, means less time to do things like put out newsletters. There was plenty of material, though, and I thank all of you for that. Hopefully, we'll get things back on an even keel soon. in the mean time, thanks for your patience!

TRIPOLI SUSQUEHANNA/#71: Five members of SPAAR who are also members of Tripoli [High Power Rocketry] have formed Tripoli Susquehanna. Anyone who is interested in this group should contact Prefect Ed Miller at [717] 865-6829 for more information. You do not have to be a member of SPAAR, but you must be a Tripoli member. The Countdown will also serve as the newsletter for the High Power group. The first order of business is to locate a field suitable for HPR launches 1 or 2 times a year.

MEETINGS: A short-notice meeting was held at Section Advisor George Beever's house on August 13. Beside's Dale Greene's NARAM report [an annual favorite] the main topic

was, oddly enough, the club meetings [or lack thereof]. Since losing the use of the county library last year, we've had to "wing it". Some meetings have been scheduled on launch days, but through the fault of no one, this hasn't worked out well. The consensus of those present was that meetings are essential for conducting club business; that Saturday evenings might be the best day of the week, as opposed to Monday evenings as had been the practice from 1988 - 1992; and that a meeting every other month might suffice instead of once a month. **What do you think?** The club's schedule for 1995 will be written soon, and it would be great to have a meeting schedule included. If you have any ideas or suggestions for a location[s], don't hide them under your hat!

WINTER WORKSHOPS: Speaking of the '95 schedule, it's time to start thinking up topics for the Winter Workshops. Has anyone else seen Peter Alway's new book, The Art of Scale Model Rocketry? Maybe something from that book would be fun. Suggestions, please!

WHILE WE'RE AT IT: How about the Family Dinner, usually held in mid-January? Let's get some volunteers to look into a location. This is a fun event, so let's not wait too long.

SPAAR SPORT LAUNCHES

June 26, 1994

Only 7 flyers threw fate to the winds [not to mention their rockets] and decided to brave the rather breezy conditions. The breeze was blowing towards the dreaded corn field, which threatened to swallow up anything that came it's way...and almost did.

Daniel Feveryear and dad Glenn decided to do some Astrocam work using various motors. The final flight was made with an Aerotech D21-7T. The difference between the D21 and the Estes black-powder C6 motors was incredible. The rocket shot off the pad, and wasn't seen again until it was spotted under it's parachute heading into the corn. Daniel and Glenn searched for a long time in the field, but it was "Uncle Gary" Feveryear who eventually located it. We can't wait to see the photos!

Daniel's sister Renee flew some of her sport models, including the Rampage, Athena, and Rainmaker [it didn't work... not a drop was felt].

Doug Gardei & Co. spent some anxious moments looking for ejected reloadable motor casings, first his 18mm and then his 24mm. Both were located [someone's wallet is glad for that!]. Despite the breeze, Doug did get a good flight out of his Aerotech

Mirage on an F50 Single Use, as well as his Strong ARM on an E18 RMS.

Rick Hackman was nursing a sore foot, which limited him to only 2 flights. The rest of the time, he did RSO duty, and we thank him for that.

Mark Beaver got good flights out of his Estes Alpha III and Quest Tracer. His dad George flew a "CHAD" [Cheap-And-Dirty] two-staged Estes Super Big Bertha, with a D12-0/C6-5 combination. Flew pretty good, too. His other flights included a Custom Rockets Matra with a C6-5 [broke a fin on landing], a scratchbuilt Maxi-Alpha with a D15 RMS, and a AAA Model Aviation Fuels Cherokee-G with an E16 29mm reload. This last flight also made it into the corn, but was recovered.

Mention was made of the fact that the weather was the exact same on this day as it was at the very first club launch in late June, 1988: warm and breezy. In fact, the same number of flyers were there, too, with seven. Who says history doesn't repeat itself?

July 10, 1994

SPAAR's Apollo 11 moon landing anniversary was marked with another "theme" launch. Members were encouraged to fly models

of the vehicles that played a part in the race to the moon. A total of 52 flights were made, and 13 were "Apollo 11" flights. It was a well attended launch, too, with 13 members flying.

Matt Musselman had a number of good flights with his fleet of Estes models. The best was probably his Commanche-3, again flown in a two-stage configuration with a D12-0 and an A8-3.

Patrick Boyle made it to his first launch of the year. He flew his Quest Space Clipper a number of times with C6 motors, as well as his Super Big Bertha on a D12. His best flight was on his Aerotech HV ARCAS, with a G40. After quite a search, he did return, with the model.

Bill Rhoat got into "the Apollo 11 thing" with his Estes 1/100-scale Little Joe II, as did Rick Hackman with his Estes Mercury-Redstone. Both were nice flights.

Glenn Feveryear pulled out some real classics. First was his Centuri 1/100-scale Saturn 1B, flown with the original 2-engine cluster. In fact, as Glenn was prepping the model, he pulled out the spent motor casings from it's last flight. Believe it or not, they were Centuri motors dated April, 1974! Despite it's 20-year layoff, the model flew quite well. The second was a rare Centuri 1/45-scale Little Joe II. Glenn flew the model on a cluster of three Estes C6-3s,

for a perfect flight. There was some concern, however, when the booster portion snagged a power line briefly. It quickly freed itself, and was recovered in good shape.

Dale Greene flew a QCR Edmunds Canard model, the first flown at a SPAAR launch. The first flight was so-so and even landed in a tree. The second was much better. A rather interesting model, to say the least.

John Balmer made a welcome appearance, after about a year-long absence spent building a house. He flew his Estes "Alphalpha" [say that 10 times, fast], an old Estes Cobra 1500, and a vintage 1/70-scale Little Joe II, this being the third version flown. It flew great on a B4-2. John also flew his "Swine Dog" home-brew, which has to be one of the great rocket names.

Ed Miller flew an entertaining assortment, the best of which was his Estes Saturn V, modified in only the way that Ed can do it. This model flies great with a G64-4WL RMS. [Don't try this at home, ladies and gentlemen, these people are trained professionals in what they are doing.]

George Beever took an early lead in the race for the 1994 Rocket-Lok Award with a rather bizarre "flight". Remember the old Estes Gemini-Titan kit from the 60's and 70's? You know, the one with 2 engines and the clear plastic fins? George

"cloned" the kit a couple of years ago, and the model flies pretty well. When the fins are attached, that is. Both engines ignited, the model flew perfectly for, oh, all of about 20 feet. It then started thrashing around the sky, before it hit the ground at about a 70-degree angle. The problem? Why, the fin unit was still on the pad, smoldering nicely. Flew right out of it's pants, so to speak. If that wasn't bad enough, George's 1/70-scale Saturn 1B, scratchbuilt last year for NARAM-35, was next up. Uh, well, that E16 reload just wasn't enough oomph. Splat. Big Time.

Now, you'd think by this time that enough was enough, right? Bad karma. Cloud over your head. Nah. Out comes the modified Saturn V, built up to handle Aerotech E15s. Flown on them successfully before, many times. Today? Parachute ejection about, oh, I'd say at least 4 feet off the ground. So what if that escape tower got imbedded in the ground? But... believe it or not, all of these models are fixable, and will fly again. I must be nuts.

Jeff Aughey unfortunately had some troubles, too. His Space Shuttle had one of those good news/bad news flights. The tank section hit the ground rather hard after a 'chute deployment problem. However, the orbiter portion glided better than any of those models that your editor has seen before. Jeff's Strike Fighter, however, caught

a legitimate case of "Rocket-Lok". It hung up on the rod, never leaving the pad. We've all had that happen, Jeff, so don't feel bad!

Heard around the pads....

Dale Greene, after a not-so-successful flight: "We need to hold another auction, so I can buy some more of Ed's rockets. I'm running out of things to fly."

John Yost to Glenn Feveryear, while Glenn was prepping his Saturn 1B, whose once white paint had faded to a yellowish-tan: "Is this the Desert Storm color scheme for the Saturn 1?"

John Balmer, on explaining the meaning behind the name "Swine Dog": [doing his best Inspector Cleauseau voice] "duz your dog bight?" "no"... "aaahhh! you zed zat your dog doesn't bite!" "it's not my dog"... "ah, a swine dog, eh?"

George Beever, upon surveying the wreckage of his Saturn 1B: "well, there is something to be said for attrition."

John Balmer, after George's Gemini capsule plowed into the ground, referring the 2-man crew aboard: [doing his best McCoy voice] "they're dead, Jim."

Patrick Boyle, after engine burnout on his ARCAS G40 flight: "Uh, anybody see it?"

Lee Boyle, upon seeing the above mentioned ARCAS under it's chute: "Start walking!"

FLIGHT LOG

June 26, 1994

<u>#</u>	<u>FLYER</u>	<u>MODEL</u>	<u>MANUF</u>	<u>MOTOR[S]</u>	<u>RESULT</u>
1	Daniel F	Alpha III	Estes	E A8-3	Good Flight
2	Daniel F	Astrocarn	Estes	E C6-7	Good Flight
3	Daniel F	Astrocarn	Estes	E C6-7	Good Flight
4	Daniel F	Astrocarn	Estes	E C6-5	Good Flight
5	Daniel F	Astrocarn	Estes	AT D21-7	Good Flight
6	Daniel F	America	Estes	E A8-3	Good Flight
7	Daniel F	Bandit	Estes	E B4-4	Good Flight
8	Renee F	Rainmaker	Estes	E A8-3	Good Flight
9	Renee F	UFO	EM	E D12-3	Good Flight
10	Renee F	Rampage	Estes	E A8-3	Good Flight
11	Renee F	Athena	Estes	E A8-3	Good Flight
12	Mark B	Tracer	Quest	E A8-3	Good Flight
13	Mark B	Alpha III	Estes	E A8-3	Good Flight
14	Doug G	Arreaux	Aerotech	E D12-3	Good Flight
15	Doug G	Arreaux	Aerotech	AT D13-4WL RMS	Good Flight
16	Doug G	Mustang	Aerotech	E D12-5	Good Flight
17	Doug G	Deep Space Trans.	Estes	AT D24-4WL RMS	Good Flight
18	Doug G	Strong ARM	Aerotech	AT E18-4WL RMS	Good Flight
19	Doug G	IQSY Tomahawk	Aerotech	E E15-6	Good Flight
20	Doug G	Mirage	Aerotech	AT F50-4T	Good Flight
21	Gary F	Corsair	Estes	E B6-4	Good Flight
22	Rick H	Stalk	SB	E A8-3	Good Flight
23	Rick H	UFO	EM	E D12-3	Good Flight
24	George B	Super Bog Bertha	Estes	E D12-0/C6-5	Good Flight
25	George B	Matra	CRC	E C6-5	Good Flight
26	George B	Maxi-Alpha	SB	AT D15-4T RMS	Good Flight
27	George B	Cherokee-G	AAA	AT E16-4WL RMS	Good Flight

Launch Statistics

Models Flown:

Estes: 10
Aerotech: 5
Custom Rocket: 1
AAA: 1
Ed Miller: 2
Quest: 1
Scratchbuilt: 2

Motors Used:

Estes: 21
Aerotech SU: 2
Aerotech RMS: 5
Motor Failures: 0

July 10, 1994

1	Daniel F	Gnome	Estes	E 1/2A3-4	Good Flight
2	Renee F	Space Camel	M2F2	E C6-0	GF - 11.32s
3	Renee F	Space Camel	M2F2	E C6-0	GF - 14.58s
4	Matt M	Commanche 3	Estes	E D12-0/A8-3	Good Flight
5	Matt M	Space Racer	Estes	E A8-3	Good Flight
6	Matt M	Sentinel	Estes	E C6-5	SEP
7	Matt M	Hawkeye	Estes	E 1/2A3-2	EJ
8	Matt M	Mix & Match	SB	E B6-4	Good Flight
9	Matt M	Patriot	Estes	E C6-7	SEP
10	Matt M	Hawkeye	Estes	E 1/2A3-2	EJ
11	Patrick B	Super Big Bertha	Estes	E D12-5	Good Flight
12	Patrick B	Space Clipper	Quest	E C6-5	SEP
13	Patrick B	Space Clipper	Quest	E C6-5	Good Flight
14	Patrick B	HV ARCAS	Aerotech	AT G40-4WL	Good Flight
15	Patrick B	Space Clipper	Quest	E C6-5	Good Flight
16	Glenn F	Saturn 1B	Centuri	E B4-2 [2]	Good Flight
17	Glenn F	1/45 Little Joe II	Centuri	E C6-3 [3]	Good Flight
18	Bill R	1/100 Little Joe II	Estes	E A3-4	Good Flight
19	Bill R	NASP	Estes	E C6-5	Good Flight
20	Bill R	UFO	EM	E E15-4	Good Flight
21	Rick H	Mercury-Redstone	Estes	E C6-3	Good Flight
22	Rick H	XR-49	SB	E C6-3	Good Flight
23	Rick H	Big Bertha	Estes	E C6-5	Good Flight
24	Rick H	UFO-24	EM	E D12-3	Good Flight
25	Jeff A	Aero-Owl	SPAAR	E A8-3	Good Flight
26	Jeff A	Space Shuttle	Estes	E C5-3	Good Flight
27	Jeff A	Strike Fighter	Estes	E B6-4	Rocket Lok
28	Jeff A	Magnum	Estes	E D12-0/A8-3	1/2 GF
29	John B	Alphalpha	Estes	E A8-3	Good Flight
30	John B	1/70 Little Joe II	Estes	E B4-2	Good Flight
31	John B	Swine Dog	SB	FSI D18-4	Good Flight
32	John B	Cobra 1500	Estes	E D12-3	CHU
33	Dale G	Edmunds Canard	QCR	E B6-2	Good Flight
34	Dale G	Edmunds Canard	QCR	E B4-2	Good Flight
35	Dale G	Magnum	Estes	E D12-0/B4-4	1/2 GF
36	Dale G	Honest John	Estes	E B6-4	SEP
37	Dale G	Maxi V-2	Estes	E D12-3	Good Flight
38	Gary F	IRIS	Estes	E B6-4	Good Flight
39	Gary F	Nike-Apache	Estes	E B6-4	Good Flight
40	Ed M	Monocopter 24A	SB	E D12-5	Good Flight
41	Ed M	Hercules	FSI	FSI F100-6	Good Flight
42	Ed M	UFO-24-10	SB	AT E18-4WL RMS	Good Flight
43	Ed M	Eliminator	NCR	AT F25-4WL	Good Flight
44	Ed M	Magnum	Estes	E D12-0/A8-5	Good Flight
45	Ed M	Saturn V	Estes	AT G64-4WL RMS	Good Flight
46	George B	Anubis	Launch Pad	E C6-3	Good Flight
47	George B	Gemini-Titan	SB	E C6-3 [2]	Oooops!

48	George B	Saturn 1B	Estes	AT D9-4WL RMS	Good Flight
49	George B	Tempest	NCR	AT F25-6WL	Good Flight
50	George B	1/70 Saturn 1B	SB	AT E16-4WL RMS	OOOOPSS!!
51	George B	Exocet	Launch Pad	E D12-5 [2]	Good Flight
52	George B	Saturn V	Estes	AT E15-4WL	Good Flight

Launch Statistics

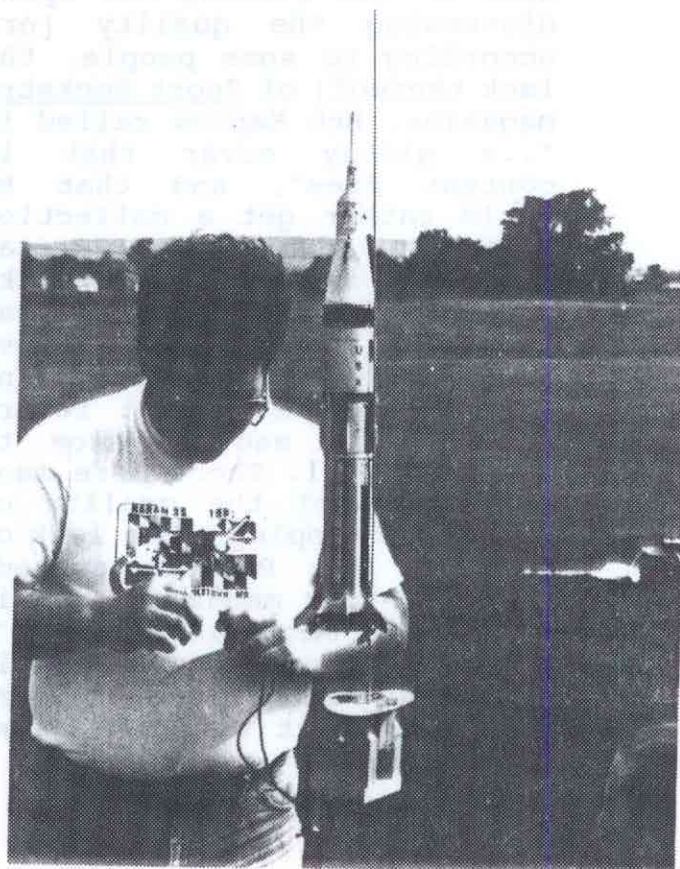
Models Flown:

Estes:	29
Launch Pad:	2
North Coast:	2
Flight Systems:	1
Aerotech:	1
Ed Miller:	1
Centuri:	2
SPAAR:	1
Quest:	1
M2F2:	1
QCR:	1

Motor Usage:

Estes:	60
FSI:	2
Aerotech Single Use:	4
Aerotech RMS:	4

SPAARPHOTOS



NARAM-36:

WHAT I SAW AT THE BIG SHOW

or

DALE'S ANNUAL REPORT

as told by Dale Greene

[Editor's note: I can say, with great confidence, that Dale's favorite part of any NARAM are the NAR meetings. As Dale will tell you, with these things, who needs "As The World Turns"?)

NAR TOWN MEETING: Mark Bundick chaired the annual Town Meeting. He started the meeting by handing out a 10-year NAR membership summary, as well as a three year financial summary.

Most of the meeting was spent discussing the quality [or, according to some people, the lack thereof] of Sport Rocketry magazine. Bob Kaplow called it "...a glitzy cover that is content free", and that he would rather get a collection of section newsletters. Several people, including Bundick, complained that they had trouble contacting Steve Weaver, the editor. According to Bundick, he doesn't return phone calls and is slow to answer E-Mail. There were many complaints of the quality of articles dropping and a lack of balance. Tom Pastric stated, "...it's your magazine, and if you aren't satisfied with it's contents, you should submit articles." This lead to many comments about articles being

cut or not published at all. One example was a Peter Alway scale article where the color documentation was cut - Weaver apparently considered it to be a historical piece rather than a scale article. Many people reminisced about the days of Model Rocketry Magazine [1968-1972], and although it was pointed out that some of this was looking at the past through rose-colored glasses, most agreed that MRM offered challenging articles that inspired them as kids. George Gassaway remembered reading about international meets and of scale rocketry, knowing that he could never reach those levels [this lead to the comment, "never take stock tips from George!]. Trip Barber was on the staff of MRM and credited editor George Flynn for the quality of the publication. George attended all of the major contests and actively "worked" on people to write articles. Bruce Kelly of High Power Rocketry also works on people - "SPockets" doesn't.

It was agreed that Steve Weaver knows very little about model rocketry and needs technical help. At NARAM-35 a number of people volunteered to be

technical editors, but Weaver hasn't taken advantage of their services. It was suggested that Weaver was not the man for the job, and Bundick agreed. The NAR is looking into hiring a production consultant. Bundick also stated that a year or two ago, the NAR had asked Kelly of HPR magazine for a price to become the NAR's magazine, but the price quoted was 250% too high.

Vern Estes then reminded everyone that "...as fond as we all were of Model Rocketry Magazine, remember that it went bankrupt."

The good news is that last year's debt of \$25,000 has been reduced by \$10,000. Bundick reports that the magazine's sell-through rate at newsstands is 65%, which is considered good.

OTHER ISSUES: Progress on the new FAA Regulation FAR 101 is being delayed by the FAA's issues in Haiti and Korea [?-editor].

DOT has been cooperating with manufacturers on approving motors for shipment [6 to 12 month delays in some cases]. This partly due to new people at DOT who don't understand the industry. For example, the Estes 1/4A motors were classified as fireworks.

THE WINNERS: National Champions for the 1993-94 contest year are:

A Division - **Tracy Wobkenberg**
B Division - **Bobby Gormley**
C Division - **Kevin Kuczec**

Team Division - **Los Cohetedores**

Section Champions: **NOVAAR**
Reserve: **Launch Crue**

Galloway Award: **J. Pat Miller**

Best Midwest Qualified Flight:
Ric Gaff, F14 Touch n' Go

LAC Newsletter Award:

"**Upstate Rocketeer**", **MARS**;
"**Countdown**", **SPAAR**, runner-up;
"**Pulsar**", **PVAM**, Rookie of the Year.

Retirees

G. Harry Stine retires from NFPA Sub-Committee on pyrotechnics after 25 years of service, replaced by J. Pat Miller;

J. Pat Miller steps down as NAR President after 16 years of service;

C. D. Tavares steps down as Trustee and Secretary after many years.

New NAR Board of Trustees

Three year terms:

Vern Estes, Trip Barber, J. Pat Miller;

Two year terms:

Ed LaCroix, Mark Bundick, Jack Cain;

One year terms:

George Gassaway, Robert Alway, Bob Sanford.

NAR Officers

President, Mark Bundick
Vice President, Trip Barber
Secretary, George Gassaway

NARAM - 36 MANUFACTURER'S FORUM

BMS: Balsa Machining Service has introduced a new size category - 4" in diameter and up to 17" long. Compound curves are also available. Call For quotes. BMS may introduce other shapes such as ellipses.

The Launch Pad: Will be introducing several new scale and near scale kits, and will be upgrading some of their current models. Most of their kits are based on 2.6" airframes and are powered by 24mm D12's or E15's.

Quest Aerospace: G. Harry Stine displayed the 5th [or is it the 6th?] version of the "Flat Cat" glider, featuring shorter, thicker wings. He also displayed the Quest DC/Y. Harry has stated that Quest has one of the most intense quality control programs he has ever seen, and is committed to providing the best motors and products on the market. He also spoke about the 6th edition of his "Handbook of Model Rocketry", which is available through NARTS.

Saturn Press: Peter [Buy My Book] Always is selling two new books - "Rockets of the World" and "The Art of Scale Model Rocketry". The latter is a "how to" book, showing instruction techniques and plans for fun-scale rockets.

North Coast Rocketry: Matt Steele showed off the new NCR Space Shuttle scale model. This is one of the most complex rocket kits ever made. This model can be flown as one piece or modified to allow the orbiter to glide back, either free flight or under R/C control. Matt has just gotten DOT approval to ship his new "Impulse" F30 and G50 motors. He feels that this is a step toward all model rocket motors being classified as Flammable Solids instead of the various 1.4 classifications the DOT now uses.

Vern Estes: Vern is writing a book entitled "Dear Mr. Estes", featuring letters from rocketeers from the early days of the hobby, as well as stories about Estes Industries. He asked for input on content. One suggestion: "How do you start a business in your garage and become a millionaire in 10 years?"

Apogee: Ed LaCroix announced that his company will undergo a major downsizing. He will discontinue his competition kits and components and will concentrate on specialty motors for the competition market. Look for a "clearance sale" in the Nov/Dec issue of Sprockets.

Estes Industries, Inc: Once again, conspicuous by their absence.

From Ed's workshop:

RELAY LAUNCHER PLAN

About two years ago, I saw a plan for a relay launcher in The Tripolitan magazine [now HPR]. Since I needed a reliable launch system, I decided to build it. Well, it was a bigger project than anticipated. First of all, I know very little about electrical apparatus or it's construction. That didn't stop me. Full speed ahead and don't look back.

I decided to build a system for dual pads [twice the work and expense]. I had to learn how to solder [how stupid am I?]. I didn't know that LED's won't work when the positive and negative leads are reversed [don't laugh at me]. I know now. It took me two weeks to do a two day job. Is that called self-improvement or what?

When I finally got it assembled and tested in my shop, I surprised myself. It worked. It was flashbulb safe, yet it literally detonated Copperhead ignitors. I am going to take this launch system out and impress someone.

This is where the real story starts. The first time out, it worked great. One of my friends asked me if it had a fuse in it. Well, no. I never thought of that. As soon as I got the system home, I took it apart to plan where to put the fuse. Before the next launch I had a 15 amp fuse installed.

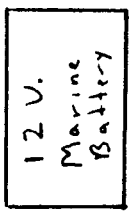
At the next launch, the system blew the fuse every time we used it. Lucky for me, I had a screwdriver and 5 extra fuses. I used them all. By the next launch I had 20 amp fuses, plus spares. This time, the launcher worked. That is, it worked for 2 flights before the fuse blew. Thank goodness for spare parts. How many amps does this system pull? Did you know there are quick blow and slow blow fuses? Guess who had the quick ones?

Who needs fuses? Give me a breaker! The local auto parts store had breakers that clipped into a fuse block just like a fuse. Problem solved? No! During the next two launches my system experienced two loose wires [expert soldering] and a few other Gremlins. Hopefully, these have been fixed. This launcher has now worked perfectly for 2 consecutive launches.

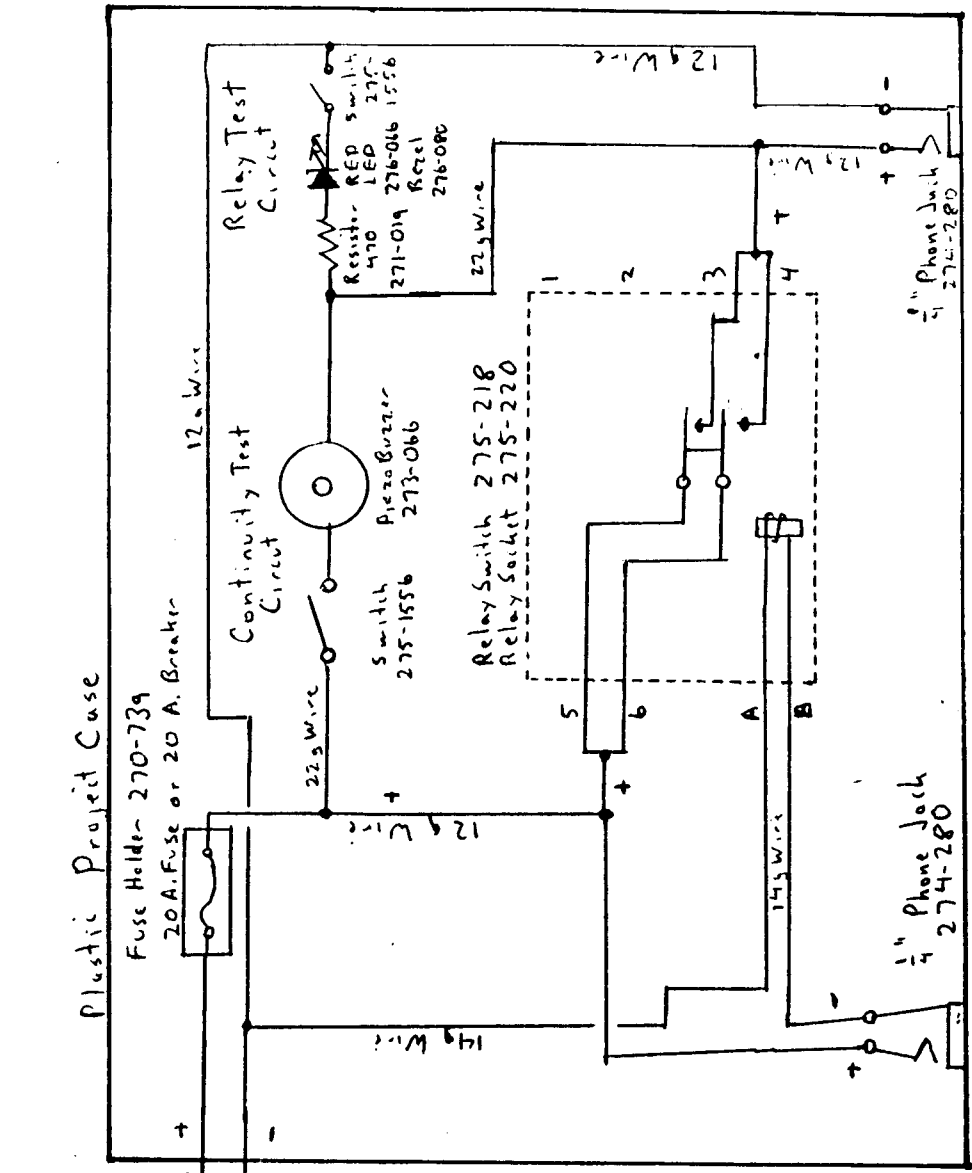
Let's get serious. This system features an arming key, LED power indicators, continuity beeper, and a relay failure test. What that means is this system has more lights, beepers and gadgets than any sane person will ever need. It's fun being a Rocket Scientist. If you decide to build this system, pay attention to which wires are positive and negative. All part numbers are listed in the schematic. That's another story; learning to read and draw schematics.....

RELAY LAUNCHER by EJ Miller

POWER SUPPLY

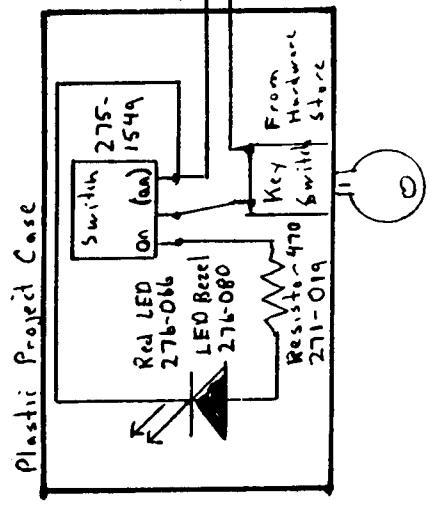


RELAY BOX

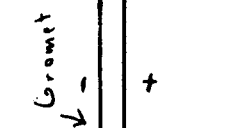
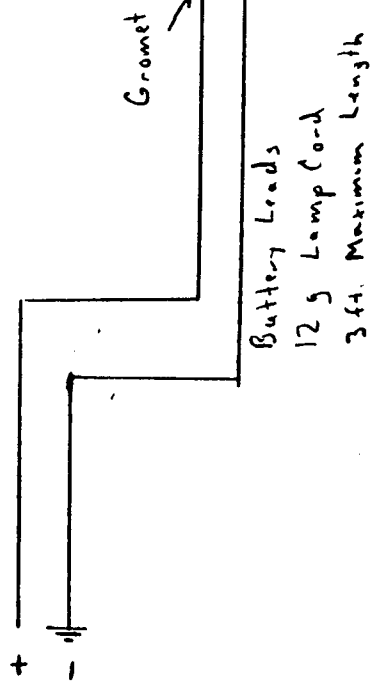


Launched Leads
12g Wire
Maximum 10ft.

LAUNCH CONTROL BOX



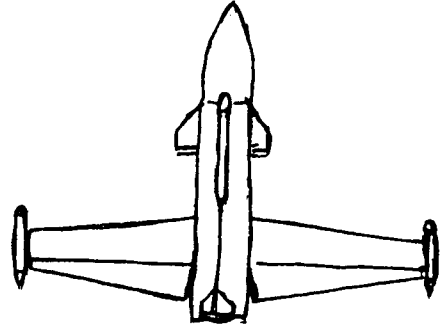
Controller Leads 14g. Lamp Cord
50 - 200 ft. Long



The XR-55 by Rick Hackman

Parts List

- 2 BNC 5V
- 2 BNC 5S
- 1 BNC 5E
- 1 PNC 80K
- 2 BT-5 3" long
- 1 BT-5 4 $\frac{1}{4}$ " long
- 1 BT-80 11" long
- 1 24" chute
- 1 $\frac{1}{4}$ " X 36" shock cord
- 1 EB20A
- 1 BT-20 3 $\frac{1}{2}$ " long
- 1 1/8" thick balsa sheet
- 1 $\frac{1}{4}$ " thick balsa sheet
- 1 1/16" thick aircraft plywood
- 1 1/8" dia. launch lug



Recommended Engines

- C5-3
- C6-3

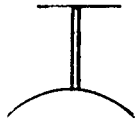
1. Wrap the marking guide around the BT-80 and mark wing and tail positions.
2. Cut one tail from the 1/8" balsa and sand the leading and trailing edges to a taper.
3. Glue the tail to the BT-80 on the tail line.
4. Cut the 4 $\frac{1}{4}$ " peice of BT-5 in half lengthwise.
5. Cut a slot in one piece of BT-5 as shown below.



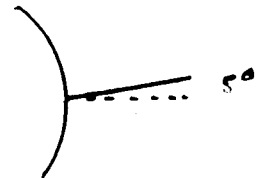
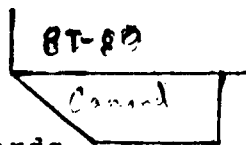
6. Glue the BT-5 to the BT-80 on the tail line so the slot locates over the leading edge of the tail fin. See below.



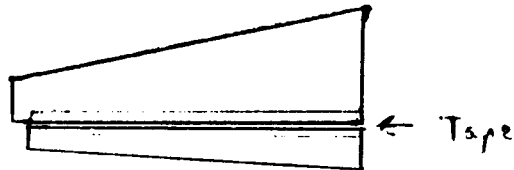
7. When step 6 is dry, pinch the ends of the BT-5 against the tail fin and set aside.
8. Cut the BNC-5E in half and sand to make it fit into the half a BT-5 glued in place. Note: Part of the BNC-5E cone will extend beyond the BT_80



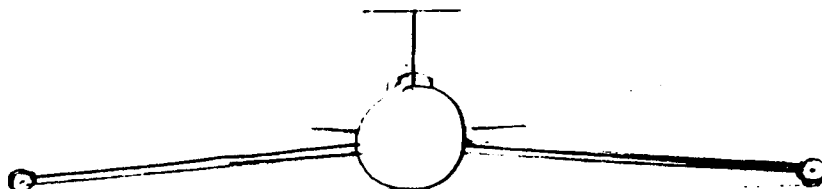
9. Cut one horizontal stabilizer from the 1/16" plywood. Sand the leading and trailing edges to a taper. Sand the sides flat. Glue the horizontal stabilizer to the top of the tail fin as shown.
10. Fillet all of the tail fin, horizontal stabilizer, half aBT-5, and half a nose cone with a good grade of glue.
11. Cut 2 canard fins from the 1/8" balsa. Sand the leading and trailing edges to a taper. Sand the root and outer edge flat.
12. Glue the canard fins to the canard fin line. The leading edge should be even with the front end of the BT-80. Tilt them upward about 5 degrees. See below.



13. Fillet the canards.
14. Cut 2 wings from the 1/4" balsa. Sand only the leading edge to a taper. Sand all other edges flat.
15. Cut 2 evelons from the 1/4" balsa and sand the trailing edge to a taper. Sand the other edges flat.
16. Lay a wing and an evelon together on your work bench keeping a 1/16" gap between them. See below. Cut a peice of masking tape 6 1/2" long and place on the wing-evelon. Tuck the tape into the gap between the wing and evelon. Flip the wing assembly over and tape again. Trim the tape where it overhangs the wing assembly. Repeat for other wing.



17. Take the 3" lengths of BT-5, glue a BNC-5V and a BNC-5S to each tube.
18. Glue one of these assemblies to the end of each wing. Make sure that no glue touches the evelons. When glue is dry, fillet the wing-pod joints. Let dry.
19. Set the BT-80 tail assembly on your work bench so that the tail points straight upward at exactly 90 degrees. Use blocks or weights to keep it in position. Put glue to the root edge of each wing and locate them to the wing lines. Leave the wing pods droop downward so that they touch the work bench. Hold the wing in place until the glue sets. Glue the launch lug into one of the fin joints and then fillet the joints with a good glue. See below.

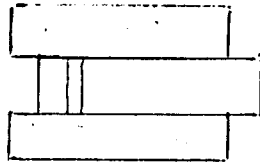


20. Cut out shock cord anchor form thick card stock. Fold and glue in shock cord as you would to an Estes mount. When dry, glue mount inside of forward end of BT-80 tube. Make sure that the mount is about 3" in from the end so that there is room for the nose cone.

21. Assemble chute. Attach chute and shock cord to the nose cone. Secure the knots with a small amount of glue.

22. Spread a line of glue inside one end of the 3½" BT-20. The glue ring should be 1" in from the end. Slide the engine block into the other end. Push the engine block into the tube with a burned out C6-5 motor until only ¼" of the motor case is exposed. Remove the motor case before the glue sets.

23. From the 1/8" balsa sheet cut three pieces 15/16" X 3½". Glue the three pieces onto the motor tube as shown below. Position them so that ¼" protrudes past the engine block end of the motor tube. When dry fillet joints.

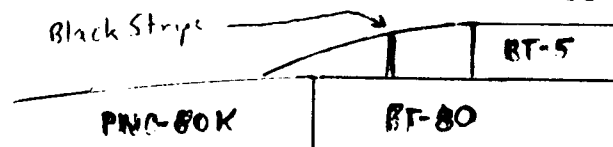


24. With the engine block forward, slide the motor mount into the rear end of BT-80 until the balsa spacers are 1/8" inside the end of tube. Glue joints securely. Let dry.

25. On heavy card stock, draw a circle the same diameter as the inside diameter of the BT-80. In the center of this circle draw a circle the same as the outside diameter of the BT-20. Cut out this ring and press it into the rear of the rocket. Glue joints securely.

26. Seal all wood surfaces with sanding sealer. Let dry. Then sand smooth.

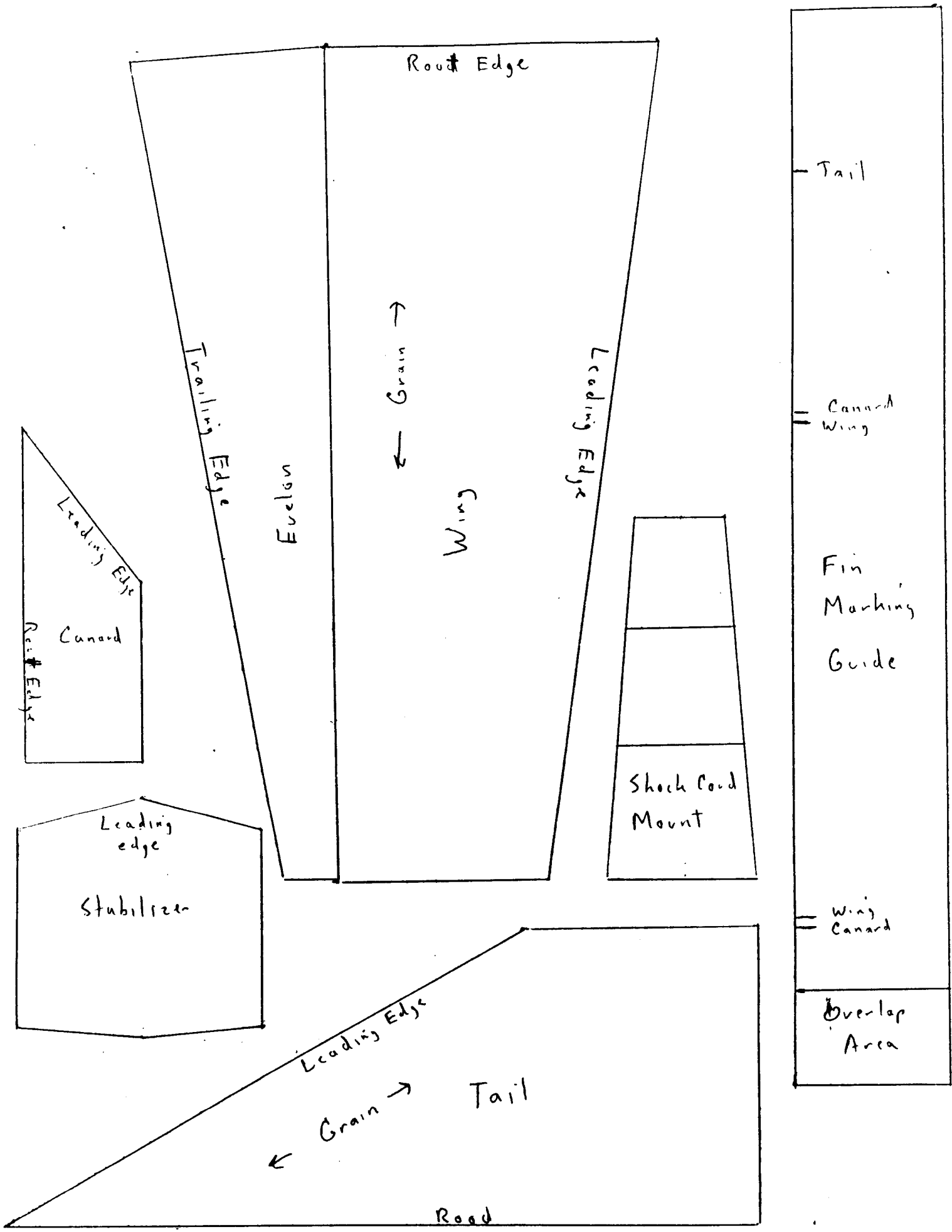
27. Paint bottom of wings and airframe Gull Grey. Paint upper surfaces Olive Drab. Paint canopy white. Paint black stripe over canopy to represent canopy joint. See below.



Decals may be applied. When they are dry give the model a few mist coats of flat clear.

28. Model may be flown with a roll by bending one evelon up an one down a few degrees.

HAVE FUN



THE SOUTHERN PENNSYLVANIA AREA ASSOCIATION OF ROCKETRY

Membership Application

Name _____ Address _____

Phone _____ Age _____ Date of Birth _____

NAR # _____ Tripoli # _____

I have been flying rockets for _____ years. I have not yet flown a model rocket _____.

DUES: 18 years of age or older: \$10 per year.

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Family Plan: Oldest member joins at full price, all other family members 1/2 price; one issue of the Countdown per family.

Return this form to: SPAAR, PO Box 127, Reamstown, PA 17567.

THE NATIONAL ASSOCIATION OF ROCKETRY

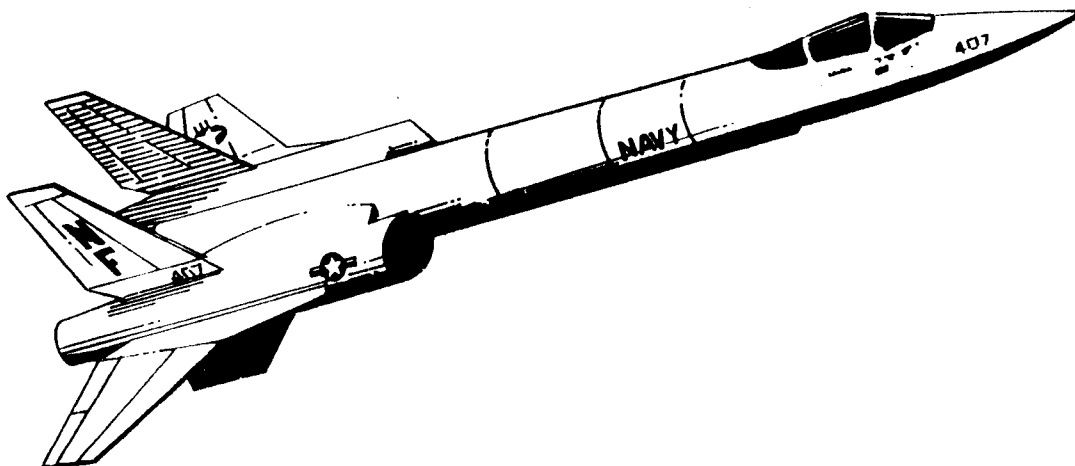
TRIPOLI ROCKETRY ASSOCIATION [HIGH POWER ROCKETRY]

For more information on the NAR, write:

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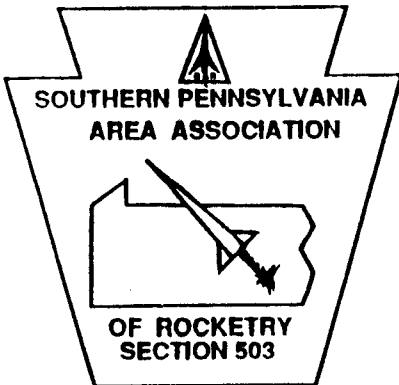
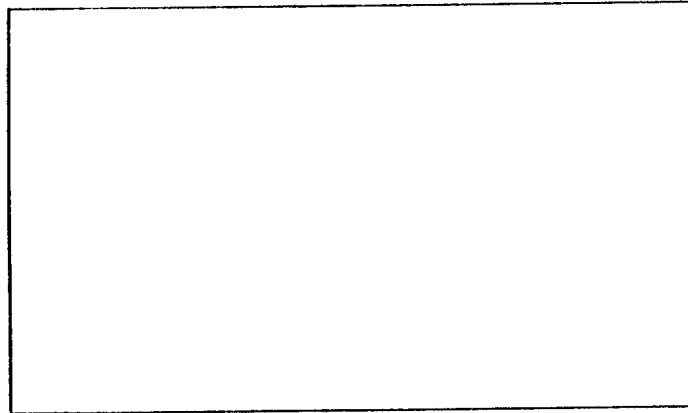
NAR Headquarters
PO Box 177
Altoona, WI 54720
1-800-262-4872

Tripoli Rocketry Assn.
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Kenner, LA 70063-0339



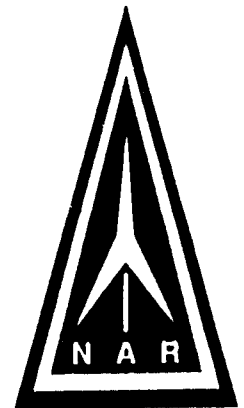
SPAAR
P.O. Box 127
Reamstown, PA. 17567

TO:



**SOUTHERN PENNSYLVANIA
AREA ASSOCIATION
OF ROCKETRY**

PROMOTING SAFE MODEL ROCKETRY
IN SOUTHERN PENNSYLVANIA
AND NORTHERN MARYLAND



*The Southern Pennsylvania Area
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COUNTDOWN